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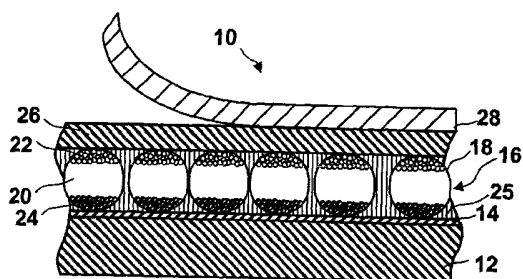
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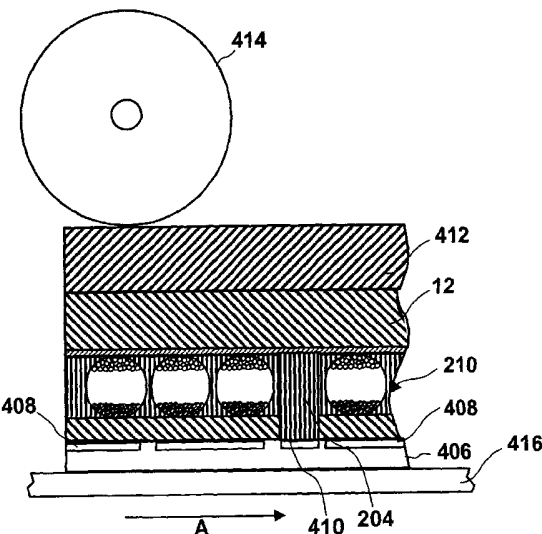
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(54) Title: COMPONENTS AND METHODS FOR FORMING AND TESTING ELECTRO-OPTIC DISPLAYS



(57) Abstract: A front plane laminate (10) useful in the manufacture of electro-optic displays comprises, in order, a light-transmissive electrically-conductive layer (14), a layer (16) of an electro-optic medium in electrical contact with the electrically-conductive layer (14), an adhesive layer (26) and a release sheet (28). This front plane laminate (10) can be prepared as a continuous web, cut to size, the release sheet (28) removed and the laminate (10) laminated to a backplane to form a display. Methods for providing conductive vias through the electro-optic medium and for testing the front plane laminate are also described.



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INTERNATIONAL SEARCH REPORT

International Application No  
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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G02F1/167

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, INSPEC, PAJ; IBM-TDB, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97/40419 A (MINNESOTA MINING & MFG) 30 October 1997 (1997-10-30)	1-7, 9-13,15, 22
Y	page 3, line 29 - page 4, line 3	14,28
A	page 5 - page 9; figures 1-3	8
Y	US 5 378 404 A (SHACKLETTE LAWRENCE W ET AL) 3 January 1995 (1995-01-03) column 21, line 18 - line 31	14
Y	US 2001/055000 A1 (KANAE NORIHIKO ET AL) 27 December 2001 (2001-12-27) paragraph [0087]	28
A	US 4 550 982 A (HIRAI YOSHIHIKO) 5 November 1985 (1985-11-05) column 3, line 54 - column 4, line 2; figures 1,6	1-4,7-15
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 03/16433

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 288 433 A (STEVENS JIM) 22 February 1994 (1994-02-22) column 2, line 65 - line 68; figure 1 -----	1-4,7-15
A	EP 0 240 226 A (GENTEX CORP) 7 October 1987 (1987-10-07) page 6, line 19 - page 8, line 52; figures 1-4 -----	1-4,7-15

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/16433

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-15, 22, 28

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

## 1. claims: 1-15,22,28

An article and a process of producing a display using said article, and a method of testing components of said article, said article comprising, in order:  
a light-transmissive electrically-conductive layer;

a layer of a solid electro-optic medium in electrical contact with the electrically-conductive layer;  
an adhesive layer;

a connection area formed by an aperture extending through the electro-optic medium and the adhesive layer;  
a release sheet that does not extend across the connection area; and  
a contact pad of electrically-conductive material overlying the electrically-conductive layer in the connection area.

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## 2. claims: 1,16,27

An article, and a method of testing components of said article, said article comprising, in order:  
a light-transmissive electrically-conductive layer;

a layer of a solid electro-optic medium in electrical contact with the electrically-conductive layer;  
an adhesive layer; and

a release sheet with an electrically-conductive layer.

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## 3. claims: 1,17,18

An article comprising, in order:

a light-transmissive electrically-conductive layer;

a layer of a solid electro-optic medium in electrical contact with the electrically-conductive layer;  
an adhesive layer;

a release sheet;

an auxiliary adhesive layer on the opposed side of the electrically-conductive layer from the electro-optic medium;  
and  
an auxiliary release sheet covering the auxiliary adhesive layer.

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## 4. claims: 19,20,21,23,24

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Articles, an electro-optic display comprising said article(s) and processes of forming said electro-optic display, the display comprising, in order:  
 a light-transmissive electrically-conductive layer;

a layer of a solid electro-optic medium in electrical contact with the electrically-conductive layer;  
 an adhesive layer;

a backplane having at least one pixel electrode, such that application of an electrical potential between the electrically-conductive layer and the pixel electrode can change the optical state of the electro-optic medium, the backplane further comprising at least one contact pad electrically isolated from the at least one pixel electrode; and at least one conductive via extending from the electrically-conductive layer through or past the electro-optic medium and the adhesive layer to the or one of the contact pads.

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5. claims: 25,26

Electro-optic displays comprising:

a backplane comprising at least one pixel electrode;

a layer of a solid electro-optic medium disposed adjacent the pixel electrode;

a light-transmissive electrode disposed on the opposed side of the electro-optic medium from the backplane;

a protective and/or barrier layer or an electrode support disposed on the opposed side of the light-transmissive electrode from the electro-optic medium; and

a sealing material for preventing ingress of material from the environment into the electro-optic medium, the sealing material extending between the backplane and the protective and/or barrier layer or the peripheral portion of the light-transmissive electrode.

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